Claims

1. A method for processing dermal tissue for implantation into a subject, said method comprising the steps of:

   a. removing the epidermal layer of said dermal tissue to produce de-epidermalized tissue;

   b. incubating said de-epidermalized tissue in at least one processing solution to remove cells from said de-epidermalized tissue, thereby producing a decellularized tissue matrix; and

   c. exposing said decellularized tissue matrix to an acylating agent, wherein the ratio of said acylating agent to wet tissue weight is about 0.003:1 or less, thereby producing a dispersed tissue matrix.

2. The method of claim 1, further comprising treating said decellularized tissue matrix to increase its surface area prior to exposing said decellularized tissue matrix to said acylating agent.

3. The method of claim 2, wherein said treating comprises cryomilling said decellularized tissue matrix.

4. The method of claim 1, further comprising contacting said de-epidermalized tissue with a viral inactivating agent, before, after, or during step (b).

5. The method of claim 1, wherein said tissue is mammalian.

6. The method of claim 4, wherein said tissue is human.

7. The method of claim 1, wherein said acylating agent is glutaric anhydride or succinic anhydride.

8. The method of claim 1, wherein said ratio of acylating agent to wet tissue weight is about 0.002:1 to about 0.001:1.

9. The method of claim 1, wherein said decellularization solution comprises sodium hydroxide.

10. The method of claim 1, wherein said decellularization solution comprises phosphoric acid.

11. The method of claim 1, wherein said tissue is autogenic, allogenic or xenogenic.

12. The method of claim 1, wherein said step of removing the epidermal layer comprises exposing said tissue to a hypertonic salt solution.

13. A method for dispersing decellularized animal tissue, said method comprising: contacting said decellularized animal connective tissue with a solution comprising an acylating agent, wherein the ratio of said acylating agent to wet tissue weight is about 0.003:1 or less.

14. The method of claim 13, further comprising treating said decellularized tissue to increase its surface area prior to contacting said decellularized tissue with said acylating agent.

15. The method of claim 14, wherein said treating comprises cryomilling said decellularized tissue.

16. The method of claim 13, wherein said tissue is mammalian.

17. The method of claim 13, wherein said tissue is human.

18. The method of claim 13, wherein said tissue is connective tissue.

19. The method of claim 13, wherein said tissue is dermal tissue.

20. The method of claim 13, wherein said ratio of acylating agent to wet tissue weight is about 0.002:1 to about 0.001:1.

21. A method for altering the condition of *in situ* tissue of a subject, said method comprising introducing an effective amount of a dispersed collagen matrix being at the site of the *in situ* tissue of said subject, said dispersed collagen matrix being prepared by contacting decellularized animal connective tissue with a solution comprising an acylating agent, wherein the ratio of said acylating agent to wet tissue weight is about 0.003:1 or less.

22. The method of claim 19, wherein said subject is a human.

23. The method of claim 19, wherein said dispersed collagen matrix is derived from an allogeneic source.

24. The method of claim 1, wherein said acylating agent is glutaric anhydride or succinic anhydride.

25. The method of claim 1, wherein said ratio of acylating agent to wet tissue weight is about 0.002:1 to about 0.001:1.

26. A composition comprising an injectable, dispersed collagen matrix prepared by contacting decellularized animal connective tissue with a solution comprising an acylating agent, wherein the ratio of said acylating agent to wet tissue weight is about 0.003:1 or less.

27. The composition of claim 26, wherein the dispersed collagen matrix is injectable through a 30 gauge needle.

28. The composition of claim 26, wherein the dispersed collagen matrix has a trypsin resistance greater than about 40%.

29. The composition of claim 26, wherein the dispersed collagen matrix has a trypsin resistance greater than about 50%.

30. The composition of claim 27, wherein the dispersed collagen matrix has a trypsin resistance greater than about 70%.

31. The composition of claim 27, wherein the dispersed collagen matrix has a trypsin resistance greater that about 90%.

32. An implant comprising an injectable, dispersed collagen matrix composition prepared by contacting decellularized animal connective tissue with a solution comprising an acylating agent, wherein the ratio of said amine acylating agent to wet tissue weight is about 0.003:1 or less.

33. An injectable composition comprising an acylated, dispersed, dermal tissue matrix having a trypsin resistance greater than about 40%.

34. The composition of claim 33, wherein the dermal tissue matrix has a trypsin resistance greater than about 50%.

35. The composition of claim 33, wherein the dermal tissue matrix has a trypsin resistance greater than about 70%.

36. The composition of claim 33, wherein the dermal tissue matrix has a trypsin resistance greater than about 90%.